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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/727,961	12/04/2003	Gregory D. Durgin	465-012US	7394

22897 7590 06/15/2006

DEMONT & BREYER, LLC
SUITE 250
100 COMMONS WAY
HOLMDEL, NJ 07733

EXAMINER	
MANOHARAN, MUTHUSWAMY GANAPATHY	
ART UNIT	PAPER NUMBER
2617	

DATE MAILED: 06/15/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/727,961	DURGIN, GREGORY D.	
	Examiner	Art Unit	
	Muthuswamy G. Manoharan	2617	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *28 March 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-15,17-21 and 23-29* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-15,17-21 and 23-29* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

The Art Unit location of your application in the USPTO has changed. To aid in correlating any papers for this application, all further correspondence regarding this application should be directed to Art Unit 2617.

DETAILED ACTION

Response to Arguments

Applicant's arguments filed on 3/28/2006 have been fully considered but they are not persuasive.

Examiner respectfully disagrees with Applicant's assertion on Page 9, of the Remarks, "Regarding the cited art, Bahl et al ..... vector based (on Page 10).

Whether it is vector-based database or raster database, what is stored in the database is location coordinates and radio frequency attenuation (Rappaport (2004/0177085), Abstract), ordered set of numbers. One can include other features as mentioned by Rappaport (Abstract). None of the other features is essential for the claimed invention.

Averaging the signal strength over finite domain is well known in the art (three dimensional bar chart, numerical integration). Also, one can convert data from one format to the other.

Bahl et al. store the locations of the mobile computer and the signal strength at various locations (X, Y, signal strength) and are stored in a table. However, Rappaprt teaches in an analogous art, raster scan format, where one can add additional features such as color, and other physicals information. Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use raster format, since raster images could be easily modified (copied, moved or clipped).

Examiner respectfully disagrees with Applicant's assertion on Page 10 of the Remarks," Neither Bahl et al. ...rasterized footprint".

Bahl teaches both first and second group of rasters (equation on Col. 10). The first two terms of the equation corresponding to the interior and the last term corresponding to the boundary. Since the analysis is linear, one can either estimate the signal attenuation due to the boundaries and the interior separately as in claims 2 and 3 or can estimate the combined contributions.

Examiner respectfully disagrees with Applicant's assertion on Page 11 of the Remarks,"no teaching or suggestion to estimate signal attenuation by estimating a surface vector of a raster at the boundary of the building. Applicant himself admitted on Page 7 of this Remarks that estimating a signal vector is nothing more than simply assigning a compass heading to the direction of a transmitter from a given raster. (It is well known in the art). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of estimating the signal vector (which is well known) for estimating the signal attenuation suggested by Baranger, which requires the direction of propagation.

Applicant's arguments with respect to claims 15,21 and 27 have been considered but are moot in view of the new ground(s) of rejection.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

Claims 15, 19, 21 and 25 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 15, Applicant recites, "estimating said angle of incidence with said building". Angle of incidence could mean angle of incidence in a three dimensional space. Also, the applicant is not estimating the angle of incidence in a three dimensional space. Since the applicant's disclosure is restricted to two-dimensional surface, the claim should be changed appropriately.

Recitation of "difference between said surface vector and said signal vector" in claims 19 and 25 is not consistent with that in the specification (Paragraph [0087]). Table I gives the angular difference between surface vector and the signal vector. This angular difference can be obtained from the product of these vectors and not from the difference (the difference between two vectors is another vector) as recited by the claims 19 and 25.

Correction and/or clarification required.

Regarding claim 21, the recitation by the Applicant, "estimate of signal attenuation is based on signal losses at a first group of said rasters" renders the claim vague and indefinite. This is because signal attenuation at any point within the building is a function of signal losses occurs at the line of sight rasters or elements and not from the other first group of rasters within the building.

Regarding claim 21, the recitation by the Applicant, "the estimated attenuation is a function of signal losses that occur within said building" renders the claim vague and

indefinite. This is because signal attenuation at any point within the building is a function of signal losses occur at the line of sight rasters or elements and not from the other rasters within the building.

Regarding claims 15 and 21, Applicant recites," surface vector" which could also mean vector normal to the surface therefore it is indefinite. Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 7-10, 13 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl et al. (hereinafter Bahl) (US 6799047) in view of Rappaport et al. (US 6850946).

Regarding **claim 1**, Bahl teaches a method for estimating a location of a wireless terminal (Col. 1, line 67), said method comprising defining a rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters (Col.2, lines 18-19), and wherein said rasterized footprint has a boundary and an interior (Every physical object has a boundary and an interior); and estimating signal attenuation due to said building (Col. 9, lines 50-52), wherein the estimate of signal attenuation is based on signal losses at a first group of said rasters (Col. 2, lines 23-26), wherein said rasters in said first group define said boundary of said rasterized footprint. Bahl did not teach

expressly the raster format. However, Rappaport teaches in an analogous art, raster format (Col. 8, line 6-7). Therefore, it would be obvious to one of ordinary skill in the art the time of invention to use the raster format, since raster images could be easily modified (copied, moved or clipped).

Regarding **claim 2**, Bahl further teaches the method of claim 1 wherein estimating signal attenuation further comprises basing the estimate of signal attenuation on signal losses at a second group of said rasters (Col. 2, lines 23-26), wherein said rasters in said second group define said interior of said rasterized footprint.

Regarding claim 7, Bahl further teaches the method of claim 2 further comprising developing a map from the estimate of signal attenuation, wherein said map associates location within said building with an indicator of signal attenuation (items 144,160 in Figure 6; Col. 10, lines 25-40)

Regarding **claim 8,** Bahl further teaches the method of claim 7 further comprising using the signal-attenuation information from said map to adjust signal-strength estimates that are obtained from an outdoor radio frequency database Col. 10, lines 25-40).

Regarding **claim 9**, Bahl further teaches the method of claim 8 further comprising: receiving a first signal-strength measurement for a first signal at said wireless terminal; and estimating the location of said wireless terminal by pattern matching a function of said first signal-strength measurement against the adjusted signal-strength estimates (Abstract, lines 5-10).

Regarding **claim 10**, Bahl teaches a method for estimating a location of a wireless terminal (Col. 1, line 67), said method comprising: defining a rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters (Col. 2, lines 18-19), and wherein said rasterized footprint has a boundary and an interior, and further wherein rasters at said boundary of said rasterized footprint define a first group of rasters; and estimating signal attenuation due to said building (Col. 9, lines 50-52), wherein the estimate of signal attenuation is based on signal losses in a second group of said rasters (Col. 2, lines 23-26), wherein said rasters in said second group are in said interior of said rasterized footprint. Bahl did not teach expressly the raster format. However, Rappaport teaches in an analogous art, raster format (Col. 8, line 6-7). Therefore, it would be obvious to one of ordinary skill in the art the time of invention to use the raster format, since raster images could be easily modified (copied, moved or clipped).

Regarding **claim 13**, Bahl further teaches the method of claim 10, further comprising; adjusting signal-strength estimates obtained from an outdoor radio frequency database using the estimates of signal attenuation within said building ((Col. 10, lines 24-28).

Regarding **claim 27**, Bahl teaches a method for estimating a location of a wireless terminal, said method comprising: accessing an outdoor radio frequency database, wherein said outdoor radio frequency database provides signal strength as a function of location; and modifying said signal strength, as provided by said outdoor radio frequency database, with signal-attenuation values from an indoor radio frequency

database, wherein said indoor radio frequency database provides signal attenuation as a function of location within a structure (col. 9, lines 54-63; Col. 10, lines 25-29). Bahl did not teach expressly the raster map of said structure. However, Rappaport teaches in an analogous art, raster map of said structure (Col. 8, line 6-7). Therefore, it would be obvious to one of ordinary skill in the art the time of invention to use the raster map of said structure, since raster images could be easily modified (copied, moved or clipped).

Claims 14, and 28-29 are rejected under 35 U.S.C. 103(a) as being 103(a) as being unpatentable over Bahl et al. (hereinafter Bahl) (US 6799047) in view of Rappaport et al. (US 6850946) and further in view of Motamedi et al (hereinafter Motamedi) (US 6985839).

Regarding **claims 14 and 28,** Bahl in view of Rappaport teaches all the particulars of the claim except the method of claim 27 further comprising: estimating the location of said wireless terminal by pattern matching a function of said first signal-strength measurement against signal-strength data from said outdoor radio frequency database, as modified by said indoor radio frequency database. However, Motamedi teaches in an analogous art, the method of claim 27 further comprising: estimating the location of said wireless terminal by pattern matching a function of said first signal-strength measurement against signal-strength data from said outdoor radio frequency database, as modified by said indoor radio frequency database (Col. 5, lines 5-13). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of claim 27 further comprising: estimating the location of said wireless terminal by pattern matching a function of said first signal-strength

measurement against signal-strength data from said outdoor radio frequency database, as modified by said indoor radio frequency database. This method is well known as admitted by the applicant (Paragraph [0008]). As mentioned by Motamedi, this technique can be applied in combination with filters to discard erroneous matches.

Regarding **claim 29,** Bahl teaches the method of claim 27 wherein said signal-attenuation values from said indoor radio frequency database are orientation-independent (Col. 6, lines 26-30).

Claims 4,5,6,12, and 20 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl in view of Rappaport and further in view of Baranger (hereinafter Baranger) (US 6119009).

Regarding **claim 4,** Bahl in view of Rappaport teaches all the particulars of the claim except for estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said first group of rasters. However, Baranger teaches in an analogus art, a method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said first group of rasters (Col. 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to include the method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said first group of rasters so as to achieve an accurate estimate of the location of the wireless terminal.

Regarding **claims 5 and 6,** Bahl in view of Rappaport teaches all the particulars of the claim except for estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters. However, Baranger teaches in an analogus art, a method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters (Col. 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to include the method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters so as to achieve an accurate estimate of the location of the wireless terminal.

Regarding **claims 12,** Bahl in view of Rappaport teaches all the particulars of the claim except for the method of claim 10 wherein estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters. However, Baranger teaches in an analogus art, a method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters (Col. 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to include the method of estimating signal attenuation further comprises accounting for an effect of building orientation with respect to a direction of signal propagation on signal losses at said second group of rasters so as to estimate the signal attenuation

when the signal direction is not along the direction of the normal to the boundary of the building.

Regarding **claim 20,** Bahl further teaches the method of claim 15 further comprising; assigning an attenuation value to a raster at said boundary as a function of said angle of incidence of said signal (Col. 6, lines 27-30).

Claims 15,17-19,21 and 24-26 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, in view of Rappaport and further in view of Baranger and further in view of Egbert et al. (IEEE Computer graphics and applications, July 1996).

Regarding **claim 15,** Bahl in view of Rappaport teaches all the particulars of the claim except estimating signal attenuation due to said building by estimating an angle of incidence of a signal with said building, and wherein estimating said angle of incidence with said building comprises estimating a surface vector of raster at said boundary. However, Baranger teaches in an analogous art, estimating signal attenuation due to said building by estimating an angle of incidence of a signal with said building. (Col. 4, lines 47-49). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to include the method of estimating signal attenuation due to said building. This would help in estimating the signal attenuation.

The combinations of Bahl, Rappaort and Branger did not teach specifically estimating a surface vector of raster at said boundary. However, Egbert teaches in an analogous art, method of estimating a surface vector of raster at said boundary (Page

21, line 5-7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of estimating a surface vector of raster at said boundary taught by Egbert, since the method of estimation by averaging will be useful when the surface is not smooth.

Regarding **claim 17**, Bahl in view of Rappaport and further in view of Baranger, teaches all the particulars of the claim except for method of estimating a surface vector of a raster at said boundary. However, Egbert teaches in an analogous art, method of estimating a surface vector of a raster at said boundary (Page 21, line 5-7). Therefore, it would be obvious to one ordinary skill in the art at the time of invention to include a method of estimating a surface vector of a raster at said boundary. This method of estimation by averaging will be useful when the surface is not smooth. Also, finding a surface vector of a surface is well known in the field of "vector analysis".

Regarding **claims 18,19,24 and 25**, Bahl further teaches estimating signal attenuation further comprises determining a difference between said surface vector and said signal vector (Col.6, lines 26-30). Also finding a difference between two vectors is well known in the field of vector analysis.

Regarding **claim 21**, Bahl in view of Rappaport teaches all the particulars of the claim except the losses are a function an angle of incidence of a signal with respect to said building. However, Baranger teaches in an analogous art, losses are a function an angle of incidence of a signal (Col. 4, lines 47-49) with respect to said building, wherein said signal is transmitted from a transmitter ("definition of a transmitter"). Therefore, it

would be obvious to one of ordinary skill in the art at the time of invention to express the losses are a function an angle of incidence of a signal with respect to said building. This would help in estimating the signal attenuation when the signal direction is not along the direction of the normal to the boundary of the building.

Moreover, the combinations of Bahl,Rappaport, Baranger did not teach the method wherein estimating a surface vector of a raster within an interior of said raster footprint. However, Egbert teaches in an analogous art, wherein estimating a surface vector of a raster within an interior of said raster footprint (Page 21, line 5-7). Therefore, it would be obvious to one ordinary skill in the art at the time of invention to include a method of estimating a surface vector of a raster within an interior of said raster footprint. This method of estimation by averaging will be useful when the surface is not smooth.

Regarding **claim 26,** Bahl further teaches; assigning an attenuation value to a raster at said boundary as a function of said angle of incidence of said signal (Col. 6, lines 26-30).

Claims 3 and 11 are rejected under 35 U.S.C. 103(a) as being 103(a) as being unpatentable over Bahl et al. (hereinafter Bahl) (US 6799047) in view of Rappaport et al. (US 6850946), and further in view of Bahl et al. (IEEE INFOCOM 2000).

Regarding **claims 3, and 11,** Bahl in view of Rappaport teaches all the particulars of the claim, except for the method further comprising determining a depth of

said raster within said interior, wherein said depth of said raster is defined by a layer number, L, wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein signal attenuation at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1. However, Bahl (INFOCOM) teaches in an analogous art, the method further comprising determining a depth of said raster within said rasterized footprint, wherein said depth of said raster is defined by a layer number, L; wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein signal attenuation at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1 (Page 779, section 4.1.2, lines 1-16 and also Figure 4). Therefore, it would be obvious to one ordinary skill in the art at the time of invention to include the method further comprising determining a depth of said raster within said rasterized footprint, wherein said depth of said raster is defined by a layer number,L; wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein signal attenuation at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1. This inclusion provides an empirical method of computing the location estimation where the local changes in environment could be easily adapted.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, in view of Rappaport and further in view of Baranger and further in view of

Egbert et al. (IEEE Computer graphics and applications, July 1996), and further in view of Bahl et al. (IEEE INFOCOM 2000).

Regarding **claim 23,** the combinations of Bahl, Rappaport and Egbert teaches all the particulars of the claim, except for the method further comprising determining a depth of said raster within said interior, wherein said depth of said raster is defined by a layer number, L, wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein surface vector of raster at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1. However, Bahl (INFOCOM) teaches in an analogous art, the method further comprising determining a depth of said raster within said rasterized footprint, wherein said depth of said raster is defined by a layer number, L; wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein surface vector of raster at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1 (Page 779, section 4.1.2, lines 1-16 and also Figure 4). Therefore, it would be obvious to one ordinary skill in the art at the time of invention to include the method further comprising determining a depth of said raster within said rasterized footprint, wherein said depth of said raster is defined by a layer number,L; wherein rasters defining said boundary have a layer number, L=1; wherein rasters defining said interior have a layer number L = 2 to n, wherein n is a positive integer; and wherein surface vector of raster at layer L= m, wherein $m \geq 2$, is based on the signal losses at layers L = 1 through m –1. This inclusion provides an

empirical method of computing the location estimation where the local changes in environment could be easily adapted.

Claims 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bahl, in view of Klepal (Czech Technical University Press) and further in view of Egbert et al. (IEEE Computer graphics and applications, July 1996).

Regarding **claim 15,** Bahl teaches a method of estimating location of a wirelesss terminal, said comprising: estimating signal attenuation due to said building, wherein said signal is transmitted from a transmitter. Bahl did not teach specifically, a method comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building by estimating an angle of incidence of a signal with said building, and wherein estimating said angle of incidence with said building comprises estimating a said angle of incidence with said building comprises estimating a surface vector of a raster at said boundary.

Klepl teaches in an analogous art, a method comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building by estimating an angle of incidence of a signal with said building, wherein said signal is transmitted from a transmitter, and wherein estimating said angle of incidence with said building comprises estimating a said angle of incidence with said building comprises estimating a surface vector of a

raster at said boundary (Figure 4.54, Page 70; "line of sight grid elements", Page 67, lines 22-27; "angle of arrival of a ray"; Figure 4.149). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building by estimating an angle of incidence of a signal with said building, wherein said signal is transmitted from a transmitter, and wherein estimating said angle of incidence with said building comprises estimating a said angle of incidence with said building comprises estimating a surface vector of a raster at said boundary, since this modification using raster images could be easily modified (copied, moved or clipped).

The combinations of Bahl, Klepl and Branger did not teach specifically estimating a surface vector of raster at said boundary. However, Egbert teaches in an analogous art, method of estimating a surface vector of raster at said boundary (Page 21, line 5-7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of estimating a surface vector of raster at said boundary taught by Egbert for finding the line of sight elements. The method of estimating signal attenuation by Klepl requires line of sight elements, which can be obtained from the surface vector as taught by Egbert.

Regarding **claim 21,** Bahl teaches a method of estimating location of a wirelesss terminal, said comprising: estimating signal attenuation due to said building, wherein said signal is transmitted from a transmitter. Bahl did not teach specifically, a method

comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building wherein the estimated signal attenuation is a function of signal losses that occur within said building, which losses are a function of an angle of incidence of a signal with respect to said building. However, Klepl teaches in an analogous art, a method comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building wherein the estimated signal attenuation is a function of signal losses that occur within said building, which losses are a function of an angle of incidence of a signal with respect to said building (Figure 4.54, Page 70; "line of sight grid elements", Page 67, lines 22-27; "angle of arrival of a ray"; Figure 4.149). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of comprising defining rasterized footprint of a building, wherein said rasterized footprint comprises a plurality of rasters, and wherein said rasterized footprint has a boundary, an interior, and an exterior; and estimating signal attenuation due to said building wherein the estimated signal attenuation is a function of signal losses that occur within said building, which losses are a function of an angle of incidence of a signal with respect to said building , since this modification using raster images could be easily modified (copied, moved or clipped).

by estimating an angle of incidence of a signal with said building, and wherein estimating said angle of incidence with said building comprises estimating a said angle of incidence with said building comprises estimating a surface vector of a raster at said boundary.

The combinations of Bahl, Klepl and Branger did not teach specifically estimating a surface vector of raster at said boundary. However, Egbert teaches in an analogous art, method of estimating a surface vector of raster (Page 21, line 5-7). Therefore, it would be obvious to one of ordinary skill in the art at the time of invention to use the method of estimating a surface vector of raster from the teachings of Egbert. The method of estimating signal attenuation by Klepl requires line of sight elements which can be obtained from the surface vector as taught by Egbert.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any

extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Muthuswamy G. Manoharan whose telephone number is 571-272-5515. The examiner can normally be reached on 7:30AM-4:30PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Lester Kincaid can be reached on 571-272-7922. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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LESTER G. KINCAID
SUPERVISORY PRIMARY EXAMINER